THE

JOURNAL OF HEALTH.

CONDUCTED BY AN ASSOCIATION OF PHYSICIANS.

Health—the poor man's riches, the rich man's bliss.

VOL. III. PHILADELPHIA, SEPTEMBER 14, 1831. No. 1.

IT is a wholesome task, at the beginning of a new year, to commune with one's self, by inquiry into the effects of past conduct on bodily health and peace of mind—to contrast, in one's own bosom, good with evil; and to determine, after actual experience and feeling of the comfort of the former, and of the multiplied annoyances inflicted by the latter, so to shape our future course as to insure the continuance of the one and exemption from the other. History and biography are but retrospections of other men's conduct, for the guidance of those who peruse them. Moral suasion consists more in urging to purity of conduct, by the lessons of the past, than by promises for the future. Nearly all the benefits to be derived from these various sources, are obtained by communing with a friend, giving and receiving acknowledgments of error, and the expressions of self-conviction in favour of what was wise, just, and prudent. 'Know thyself,' as uttered by the ancient sage, is rather an exhortation than advice—rather uttered to rouse to inquiry into our past conduct, and analysis of our present feelings, than an indication of a specific line of conduct.

In beginning with our readers and friends a new year of our editorial career, we have indulged in the course of retrospection here spoken of. We have communed with ourselves, and with each other, on the bearing of the opinions advanced, and facts stated in the volume now closed. We have, in default of manly and judicious criticism from others, taken the task on ourselves, and have arrived at conclusions which, though they do not

wound our self-love, are certainly not a mere echo of this feeling. Having thus prepared ourselves, may we not be allowed, in a frank and friendly spirit, to ask our readers to lend us their ear, while we invite their attention to a brief review of topics, which we have had occasion to present to them concerning their health, and as a necessary connexion, indeed, almost integral part, the evenness of their moral feelings and the vigour of their intellectual faculties. We would pray them to engage for a brief space in the task of retrospection, and while doing so, to separate into two classes, the acts and agents by which their health has been affected during the past year. The first will include all by which they are conscious they have been injured. The second all that have manifestly contributed to their bodily well being.

Among the causes operating injuriously they will be able, by a careful retrospection, to separate those which have injured by their excess, from those which are positively and inherently detrimental. Under the first head they will probably class: 1. Eating *too promiscuously* of *numerous* articles of food, each *single one* of which, general experience shows may be made subservient to healthy nutrition. 2. Eating *too much* of one or two articles of food, which in *moderate quantity* are universally recognized as wholesome and nourishing. 3. Excess in eating, relatively to *deficiency of exercise.* 4. Excess in the same way, relatively to *period*, as heavy suppers just before going to bed. 4. Labour of body, or bodily exercise, in excess, relatively to *existing strength* or *prior habit.* 5. Labour of mind or mental exertion, too great in reference to its *duration* at any one time, or to the *particular period*, as after a full meal or at midnight. 6. Sleep and repose in bed, excessive in the entire interval, in regard to the *limited exercise of mind or body during the day*, and to the general usage and experience of other persons similarly constituted and circumstanced; or sleep and repose misplaced in regard to the period in the twenty-four hours when they are indulged in—as from midnight to eight or ten in the morning, or in the day in place of the night. 7. Amusements and recreations taken at improper periods and places; as when gymnastic exercises, including dancing, are attempted after a full meal; or visits to the theatre or ball-room prolonged late into the night; or any amusement attempted to be enjoyed in a close atmosphere, as in a crowded room, theatre, &c. 8. Exposure to a cool air, or to wind, pure in itself and of refreshing temperature, but misapplied relatively to exhaustion from great bodily exercise, much perspiration, and cool skin. 9. The use of drink, of a wrong temperature in regard to the existing state of the body, as when very cold water is drunk by a person who has been exhausted by exposure to intense solar heat and great labour; or who is at the time suffering from cramps or flying pains in the stomach: the whole mischief here has been

from the coldness, not the fluid itself, than which there is no other so salutary, safe and proper, if it be of a suitable temperature.

The agents inherently detrimental to health will be found, by the persons who indulge in retrospection of their own feelings, to be those which are neither adapted to nourish the body, nor to give appropriate stimulus and exercise to any one sense; but the effect of which is uniformly, with more or less rapidity, to weaken, by first exciting—and to destroy the balance of the functions of the body, and render unequal the operation of the mental faculties. First in degree, of the directly injurious causes, are fluid stimuli with an alcoholic basis, such as distilled and vinous liquors, solid substances of a narcotic character, and chiefly tobacco in its various forms, and opium: next in the scale are other matters called medicinal, such as salts, acids, bitter mixtures and infusions, astringents and chalybeates—when habitually or oft taken.

Next in importance to the communion with one's self about matters of direct personal interest and gratification, comes that which fixes our attention and feelings on whatever concerns those we love. Let us then invoke mothers, while reviewing the past year, to scrutinize with care the effects of the course they have pursued, on the health of their children. Have they followed out the advice and directions which, when first given, they received with readiness, and promised to act on? Has the puny and pallid infant become, during the year, a chubby faced child? or has the fulness and colour of health been exchanged in the little being for an emaciated and sickly frame? Has the occasional indulgence of its appetite for cakes, sugar plums, &c. been allowed to become a fixed indulgence? and have its colics been converted into habitual indigestion, with its accompaniments fretfulness, much crying, and irascibility? Is its sleep sound and refreshing, or broken by starts and screams? On the solution of these questions depends the course of conduct which the mother ought to pursue for the future, so as no longer to sacrifice the health of her child to her own indolence, waywardness, or forgetfulness. Let her inquire what in its clothing, its food, and its exercise in the open air is faulty, according to the opinion of those on whom she reposes confidence, and to general experience.

Does a father now make the unwelcome discovery that his son, just entering his teens, smokes a segar occasionally, and can toss off a glass of grog?—he ought to ask himself, on retrospection, what there has been in his own practice, in these particulars, to set so bad, so cruel an example.

We might greatly extend these interrogatories, in the same spirit of friendly communing with our readers: but if they allow their minds to dwell on the topics already offered to them, they cannot fail to see the bearing of others in close connexion with these. There is one great obstacle to their duly appreciating the

merits of their own case; and that is, the cravings of appetite, and the slavery of habit, induced by the long indulgence of appetite. Freedom can here only be obtained by putting in opposition to their own perverted feelings, the concurrent opinion of the wise and the learned, and the experience of that portion of mankind whose health, bodily vigour, and tranquillity of mind, are proof of the soundness of the dietetic maxims by which they are regulated.

THE CONTRAST.

Messrs. Editors,—I have recently had an opportunity of contrasting the appearance of an aged and a young man of sedentary habits, whose history may serve as a warning to some of your readers. The one is 75 years of age; yet from his erect form, firm movements, and cheerful and healthy countenance, he seems not to have reached the age of sixty-three. He is of about middle height, strong and muscular, having none of that pallid and emaciated appearance, which is so common among literary men of the present generation; although the fact that he has been a laborious instructor of youth for about half a century, would naturally have led us to other expectations. There is no appearance of decay in any of the mental faculties; on the contrary, he composed, in my presence, at the request of a friend, an original article on a given subject, that exhibited all the vigour and activity of youthful intellect, and would have done honour to the ablest periodicals of our country. His religion too, wears none of that sombre hue, which, in an instructor, is so peculiarly uninviting, and which often counteracts the natural tendency of the most important precepts, even when delivered with all the solemnity which their importance demands.

The other person seems, in some respects, to belong to a different race of beings. Pale, feeble, emaciated, and sickly, with slender and enervated muscles, and with an anxious countenance: at only 35 years of age, he seems scarcely younger than the former; and affords a striking specimen of the evils of premature mental development, in dooming a towering mind to perpetual imprisonment in a feeble body, and subjecting both to consequent premature decay and dissolution.

Whence this surprising difference? It is claimed that physical peculiarities may be *inherited*, even from a generation quite remote from us. In the present case, however, there is no evidence of any such transmission; but we have *prima facie* evidence that causes exist fully adequate to the production of pre-

sent appearances. In such a case, it is unphilosophical to refer to others more remote and obscure.

The education and habits of the two persons have made the difference. One of them was born in an age when it was not so fashionable as now, to sacrifice health of body for the sake of intellectual attainments;—when, if less Greek and Latin were *acquired*, less vigour of body was lost during the process;—when, too, it was not deemed indispensable to push the pupil through his course of study, at the earliest period possible; as if the salvation of a country or of the universe depended on his appearance upon the world's great theatre by the moment he was 18 years of age. Until he was 20 years old, he was engaged in agricultural and other manual labours, receiving no other instruction than what was afforded to the mass of the community at that time. At the age of 20 or 21, he commenced a course of study, and subsequently to this became a useful minister and instructor. But through the whole period of his long life, whether employed in instructing himself or others, he has never failed to use much physical exercise in the open air, daily; both from choice, and a conviction of its utility.

The other person, though born within the same boundaries of country, had the misfortune to be subject to a train of influences less happy. Particular circumstances, together with certain accidental occurrences, restrained him from taking part in the sports and other pursuits of those of his own age, and his mind was easily directed to books as sources of amusement. His rapid advances in his studies became a theme of conversation among his friends and acquaintance, and no pains were spared to aid him in his progress. The desire of pleasing his friends, emulation, and perhaps the love of learning for its own sake, all combined to fix his attention, and occupy his time, chiefly in mental efforts. By the time he was eighteen, he had completed his academical studies, and acquitted himself with honour. When engaged as an instructor, and in other avocations demanding much mental exertion, the habits of study he had acquired led to the neglect of physical exercise, till, involved in the horrors of dyspepsy, he discovered, almost too late, his error; and has long been doomed to a state of physical debility which will not only in a measure disappoint the hopes of his friends, but materially diminish his own usefulness and happiness.

By a more rational education, the elder individual to whom I have alluded, escaped those deteriorating influences to which the other was subjected; and though his mental faculties might have been longer in unfolding, yet the process was vastly more in harmony with the development of his physical frame, and moral powers. In the enjoyment of full health, by alternating labor with sedentary employments, he has been able to sustain

such a degree of mental exertion as would have destroyed a *modern* student;—and to continue his labours to *threescore and ten!* The younger, on the contrary, a sufferer perpetually from premature mental effort, undertaken without regard to suitable relaxation, and daily physical exercise, is sustained amid a burden of care and fatigue by that resolution and determination, I had almost said *desperation*, which rational philanthropy and Christian benevolence, quickened by a sense of his own woes, and a knowledge of their cause, can alone produce. A course, however, which must, in all probability, cut short, even of the narrow limits of threescore and ten, a life devoted without reserve to the best interests of mankind.

Too long has it been the predominating purpose of parents and instructors to elicit *mind* merely;—to expand or at least to fill the intellectual domain; come of physical and moral well-being what might. A prodigy in intellect has been hailed as Heaven's special favourite, and either directly or indirectly held up as a worthy object of universal admiration and imitation; forgetting what injury is done to the moral character, or to the health. For my own part, if I rejoice at all at precocious mental development, it is with much trembling, lest it should bring in its train the ruin of the body and the contamination of the soul. Let mind be developed, but no faster at any given time, than is consistent with the cultivation of moral character, and firm, vigorous, and increasing health. The moment we overstep these natural limits, not the mind only—not the particular faculty which is overstrained, alone,—but the whole system suffers. "Whether one member suffer, all the members suffer with it, whether one member rejoice, all the members rejoice with it," is alike the language of experience and of revelation.

RIPENING OR MATURATION OF FRUITS.

The French Royal Academy having received recently several communications relative to the process of ripening or maturation of various fruits, ordered a report to be drawn up on the subject, by a committee of the academy, the result of whose labours may be thus summed up. That during the conversion of *green* into *ripe* fruit, the process is, in every case, accompanied by the formation of carbonic acid, and the process is nearly as follows. The liquid sap of the fruit is, in the first instance, converted into a gelatinous fluid, which successively forms beneath the rind, and thus produces the volume of the fruit. When this vegetable jelly is formed in great abundance, it is not unusual for it to cause the skin of the fruit to burst, and to discharge itself in the form of gum on the surface, as in the plum and other fruits. In the

course of its circulation the sap obtains an additional portion of oxygen, by which it is converted into citric, malic, and other vegetable acids, according to the specific quality of the fruit.

As the fruit increases in bulk, the rind becomes gradually thinner, when the absorption of heat and light alters the chemical character of the pulp, and produces the saccharine qualities and flavour of the particular fruit, accompanied by the well known change of colour termed *bloom*, or ruddy blush colour. That the direct rays of the sun are the immediate agent in this process is fully proved by the fact, that if the fruit or any part of it be shaded by a leaf, or is otherwise screened from the sun, it never acquires, either wholly or in part, that ruddy aspect, nor the same flavour, as fruit that has been freely exposed to the solar rays.

The committee of the Academy, by whom the report is drawn up, found, by a set of well conducted experiments, that the pulp of vegetables, as of apples for example, on being digested for a short period in dilute vegetable acid, at a given temperature, produced a saccharine juice, analagous to the juice of grapes. That the gum, or gelatine of peas, and other similar plants, subjected to the action of oxatic acid, also produced saccharine matter. The starch or fecula of plants in like manner, on being mixed with the acid of grapes, become converted into saccharine matter, by first passing into a substance like gum arabic, and subsequently into a saccharine fluid. This conversion of vegetable mucilage and jelly into sugar, by the agency of vegetable life, has long been observed, though the process is too refined to allow of its being exactly traced in the chemical laboratory of nature. The ripening of fruit may, therefore, be compared to a spontaneous fermentation of vegetable substances by natural heat, as in the process of malting by germination and artificial heat. It is only after fruit has become fully ripe that it is fit for food—its firm, almost indigestible substance being in the process of maturation, reduced to a soft pulp, and its juices converted into a highly nutritious fluid, in which water, sugar, and vegetable jelly predominate. The wholesomeness of any fruit is always, therefore, in proportion to its pulpiness, and to its saccharine and mucilaginous qualities. It is this which renders the peach, grape, strawberry, and different varieties of the pear, so much superior for eating to most other fruits.

EPIDEMIC DISEASES.

Men have ever taken a lively interest in the histories of diseases, as subjects of direct personal application to themselves. No matter what may be the malady, they cannot be so far blinded

by the pride of station or of wealth as not to feel instinctively that they may one day be its victims. But how much greater must be the curiosity—how intense the interest excited, when we hear of diseases devastating a whole country and even extensive regions of the earth, as in the case of the plague, the influenza, and the cholera. Eagerly do we inquire into the origin, the mode of extension, and still more into the means of prevention and cure of such formidable maladies. The solution of these points is by no means easy—nay, let us at once admit, in a suitable spirit of frankness, that it is incomplete. But it is not the less important that the material facts in the case, the truth, as far as it is known, should be generally promulgated; since it has been found, by lamentable experience, that the terror resulting from ignorance and prejudice, has often caused more deaths than would have followed the visitation of the epidemic disease, abandoned to its own course.

To correct misconceptions, allay present fears, and prevent future alarms, we shall, from time to time, lay before our readers sketches of the history of EPIDEMICS.

Astrology, chemistry, and natural philosophy, have each in turn been employed to account for the origin of epidemic diseases. Contagion has played a part, to the extent of referring all to it; and in this, as in many other questions, after having gone the round of speculation and forced analogy, we are compelled to resume our course from the very point indicated by the Father of Physic,* twenty-two centuries ago, and take his writings on epidemics, on air, water, and situation, and the 3d section of his aphorisms as our chief guides.

It is but fit, in advance, to apprize the reader of the distinction between epidemic and endemic diseases. The first attack a great number of persons at the same time, may extend over a whole country or continent, depend on some general and common, but temporary or accidental cause, and last only for a limited period. The second have their origin in a fixed and stated cause, peculiar to the country, and remain without change or variation for many years. The former are more particularly dependent on the state of the atmosphere, viewed as a grand whole; the latter on the nature of the soil and its productions, and the partial emanations altering the purity of the air.

It is, however, very obvious, that, if we admit endemic febrile diseases, we must also allow the superaddition of epidemical influence, whereby the former are aggravated, and the number of persons who are attacked greatly increased. Take intermittent

* Hippocrates.

and yellow fevers, for example, which, though usually restricted to certain bounds in a country, and assailing a limited number of persons, may and do at other times prevail most extensively, and with symptoms of greater malignity.

In assigning the cause of epidemical disorders, we might begin with the direct influence of the sun and moon, and other planets, and sudden and violent commotions, as earthquakes, in our own; but we prefer passing on to the more evident, if not palpable causes in the changes in the state of the atmosphere, by which we are surrounded, and which is both the source, and the conductor of these morbific agencies.

The ancients, from the very limitation of their knowledge, were brought more frequently to commune with nature, and observe the changes in the elements by which they were sensibly affected, without losing time in analyzing too minutely, or searching after first causes. Let us, then, in imitation of them, look to the medical properties of the air, that is, its different states of dryness or humidity, and of heat or cold, the direction of the winds, and, perhaps, the degree with which it is penetrated by the electric fluid, and impregnated with various vapours.

Each particular state of the atmosphere in respect to heat or cold with moisture, will, if long continued, give rise to a peculiar physiological and pathological state of the persons or people exposed to it: but we must seek for the causes of epidemic diseases in great vicissitudes of weather, and rapid transition from heat to cold, and cold to heat. From what we have said, it appears then, that epidemics may prevail at all periods of the year, but more particularly in spring and autumn, seasons which exert a marked influence over the production and nature of diseases. They are in fact, the two principal seasons for the physician; those which give the colouring and shade to the other diseases of the year. This truth, advanced by Hippocrates, has been adopted, enforced, and more fully illustrated by Sydenham, who thinks also, that in addition to these annual and successive epidemics, there is a stationary constitution of the air, which lasts many years, and under the dominion of which, the former or annual epidemics appear with modification

These grand epidemical constitutions are not, he thinks, due to the changes in the atmosphere, perceptible to our senses, but to alterations, of the nature of which we are ignorant.

THE EYE.

THE eye, the organ of one of the most important of our external senses, which, by the variety of the impressions it conveys to the mind, augments immeasurably the perceptive powers of

the latter—enlarges the sphere of intellect, and adds so largely to our stock of pleasurable sensations, is in its structure less complex than might at first be supposed. It consists of two distinct parts—the ball of the eye, or the proper organ of vision, and the accessary apparatus, destined to shield it from injury, to preserve it in a fit state for the performance of its functions, and to produce the various movements of which the ball of the eye is susceptible. It is the former only, into the description of which we propose at present to enter, reserving the latter for a future occasion.

The ball or socket of the eye, as all are aware, is situated in a deep bony socket, and thus secured from a thousand accidents, to which it would otherwise be every moment liable. The socket is well lined with fat, which serves both as a soft bed for the eye ball, and, also, to facilitate its motions. When this fat diminishes, as in sickness, the eye sinks back in the head. The ball of the eye is considerably smaller than the socket, to allow room for its motions: it is not perfectly globular, but is in some degree elongated, and is composed of different coats, somewhat like the coats of an onion, which enclose several humours. Externally is a hard, opaque, pearly or bluish white coat, called *sclerotica;* this forms what is termed the white of the eye. This coat is covered with a fine transparent membrane, continuous with that which lines the eye lids. Within the sclerotic coat, and in close contact with it, is the middle coat of the eye, which is thin, rather soft, and so full of minute blood-vessels, that its inner surface has a fleecy or velvet-like appearance, from their numerous terminations. This is called by anatomists the *choroid coat.* The innermost coat of the eye is a white and extremely tender film or net work, formed by an expansion of the optic nerve, or nerve of vision. It is called the *retina.* This description applies, however, only to the posterior and lateral parts of the eye ball, for in front, instead of the opaque exterior coat, we observe a projecting transparent circular part, which from its being firm and transparent, like horn, is called the *cornea.* This portion is somewhat more convex than the sclerotic coat, representing the segment of a smaller sphere added to the segment of a greater; or, in more familiar language, it may be compared to a convex watch glass, fixed in the less convex surface of the watch case.

The connexion between the external and middle coats of the eye is very slight, depending upon a fine cellular membrane, and very small blood-vessels and nerves; except around the margin of the cornea, where these coats are firmly connected together by means of a white ring, called the *ciliary ring* or *ligament.* The middle coat proceeds anteriorly to this ring, but no longer lines the internal surface of the shell of the eye.—It is now reflected inwards, in a transverse direction, as if to form a par-

tition, and is plaited or laid in beautiful folds like the ruffle of a shirt.

Behind the transparent cornea, is one of the most beautiful parts of the eye, which is fancifully called *iris* or rainbow, from its varied colour. It is this which, in some eyes, is blue, in others dark brown, or nearly black, and in others hazel or gray. It is a delicate and very sensible membrane, attached at its circumference to the ciliary ring and dividing the eye ball into two chambers the one anterior to it, the other posterior. The iris has a round opening in its middle called the *pupil*, or sometimes, vaguely, the sight of the eye. It is this which produces the dark circle seen in the centre of the eye, varying in size according to the degree of light to which the latter is exposed. It is invariably deep black, whatever may be the colour of the iris itself, so long as the eye is free from disease. Through the pupil the rays of light are admitted into the internal parts of the eye. The dark colour of the pupil is caused by a black paste or pigment which is spread over the internal surface of the middle coat of the eye. This paint differs in colour in various animals. In the ox it is green, in the cat and owl white and silvery, in the lion golden yellow, in the dog grayish. In the peculiar race of men called albinos, as well as in ferrets, white mice, rabbits, and pigeons, the paint is altogether wanting, and the pupil appears red, from the blood contained in the numerous vessels of the choroid coat. The use of the paint is evidently to modify the intensity of the light admitted into the eye. White and pale colours reflect light, while black and deep colours absorb it; hence animals which prey in the dark, have this paint of a paler colour than in man, in whom distinct vision, in a full light, is a more useful faculty, than the power of distinguishing objects when the light of day is excluded. The eye of the cat, especially, concentrates all the light which falls upon it, the white paint reflecting it back on the objects near them: hence their eyes are observed to gleam in the dark, becoming in some measure a torch to light them to their prey. Upon the posterior surface of the iris, is, also, spread a paint upon which its colour depends: it is usually brown even in light-coloured eyes. The different shades of colour in different individuals, result from the degree of transparency possessed by the iris.

The iris is capable of expanding and contracting in such a manner as to lessen the size of the pupil on the approach of a strong light, and to enlarge it in proportion as the light is less vivid. By this beautiful yet simple contrivance, the eye adapts itself instantaneously to the different degrees of light to which it may be exposed. Were the pupil to remain always as much contracted as it is when exposed to the light of noon day, a weaker light, as that of the moon, would not be admitted with suffi-

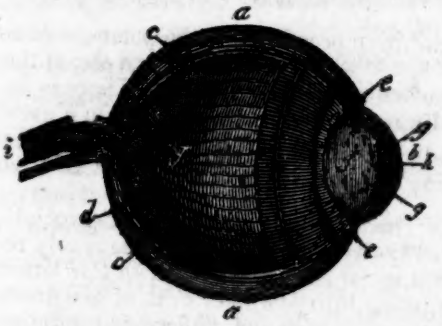
cient freedom to allow of distinct vision. On the contrary, if the pupil were permanently dilated, we might take advantage of the scattered rays of light, but should be distressed and blinded by the glorious effulgence of the sun.

The ball of the eye is filled with three substances, which differ from each other in consistence, but are all called *humours* of the eye; they are the aqueous, vitreous, and crystalline.

The *aqueous* or watery humour, which is a perfectly limpid fluid, fills the space between the iris and cornea, or the anterior chamber of the eye. Its use appears to be to distend the cornea, and preserve its convexity: it likewise affords a medium for the iris to float in, so that it may perform its motions with perfect freedom. The watery humour accordingly fills the opening of the pupil, and a small quantity of it also lies behind the iris. The portion of the eye behind the iris is much the larger one, and is chiefly filled with a transparent fluid, which, from its appearance, is called the *vitreous* or glassy humour; resembling very nearly melted glass, or the white of an egg. There is, besides, a small round transparent body, set in the front of this humour, like a diamond in a ring, immediately behind the pupil. This is the *crystalline humour* or *lens*. The glassy humour does not float freely like the watery, but is contained in a very transparent membrane, which is so arranged as to form innumerable little bags, each one containing a drop of the fluid, and so perfectly transparent as not to break the course of a single ray of light. The uses of this humour would appear to be, to keep the ball of the eye distended to the size necessary for the purposes of vision, and to retain the crystalline lens at the proper focal distance. This latter body, as has been already mentioned, is placed immediately behind the pupil, in a cup-like depression of the glassy humour. In form, it is like a very small, thick spectacle glass, or the doubly convex lens of a spy glass. It is composed of very transparent scales, laid one over the other. In the centre of the lens, these scales lie closer together than they do nearer the surface, forming a kind of firm button, which will leap out if the outer scales be divided. The whole lens is surrounded by a strong, thick, transparent and elastic skin or capsule. The use of the crystalline lens is to concentrate the rays of light, proceeding from objects in the field of vision, so as to form a distinct image of them at the bottom of the eye upon the retina, or nervous coat. From this last, through the medium of the optic nerve, the image is conveyed to the brain.

The lens becomes occasionally opaque, constituting the disease termed cataract. Sight is of course prevented, and on looking into the pupil, it is perceived to be cloudy, gray or white, and not deep black, as in the healthy eye.—The foregoing description

will be better understood by the following drawing, which represents a longitudinal section of the eye ball.



aa, Outer or sclerotic coat.—*b*, The cornea.—*cc*, Middle or choroid coat.—*d*, Inner coat, or retina.—*ee*, The ciliary ligament or ring, with the folds of the choroid coat.—*gg*, The iris.—*h*, The pupil.—*f*, The crystalline lens.—y, The posterior chamber of the eye, filled with the glassy humour.—*i*, The optic nerve.

PROXIMATE PRINCIPLES OF VEGETABLES.

A BRIEF summary of the nutritive elements of vegetable bodies will, we have reason to believe, be acceptable to our readers, and prepare them for a better understanding of the subjects of aliment, and nutrition in general.

Every distinct compound which exists ready formed in plants, is called a *proximate* or *immediate principle* of vegetables. Thus sugar, starch, and gum are proximate principles. "The proximate principles of vegetables are sometimes distributed over the whole plant, while at others they are confined to a particular part. The methods by which they are procured are very variable. Thus gum exudes spontaneously, and the saccharine juice of the maple tree is obtained by incisions made in the bark. In some cases, a particular principle is mixed with such a variety of others, that a distinct process is required for its separation. Of such processes, consists the *proximate analysis* of vegetables. Sometimes a substance is separated by mechanical means, as in the preparation of starch."*

The chief nutritive principles in vegetables, are *gluten*, *starch* or *fecula*, *sugar*, *gum*, and *oil*, on the quantity and different preparations of which depend their alimentary properties. The first of these principles may be exhibited in the familiar process of making starch from wheat flour. Thus, if we take a paste of moistened flour, enclosed in a piece of linen, and pour water on it, this fluid carries off a part of the flour, and leaves, by repeated washings and squeezing between the fingers, nothing behind but a tenacious mass, called gluten. The water has carried off the fecula or starch, which gradually falls to the bottom of the vessel, and a small proportion of sugar and gummy matter which are dissolved in it. The difference in the nutritive properties of grains and esculent roots is explicable, as we have just said, by the various proportions of these proximate principles. In many of the nut tribe, oil is the most abundant principle. In the following table, the figures are expressive of so many parts in the hundred.

	Gluten.	Starch or fecula.	Sugar or sweet matter.	Gum.	Water.
Wheat,	10 to 20	72 to 75	4	2	10
Barley,	3	87	5	4	
Rye,	8	60			
Oats,	8	59			
Rice,	0	83 to 85			
Potatoes,	0	10 to 15			70 to 80
Arrow Root,	0	nearly all			
Sago,	0	nearly all			
Tapioca,	0	nearly all			

* Turner's Chemistry—edited by Franklin Bache, M. D. Philadelphia, John Grigg.

Davy makes the proportion of gluten in wheat, to be from 19 to 24 per cent. whilst Vauquelin and Henry, of Paris, find the flour of the Paris bakers to be 10.20 to 10.25 per cent. The difference, therefore, is very great in the varieties of wheat.

The reader who is aware of the nutritive properties of the potato, will be astonished at the small proportion of fecula which it contains, and also at this being the only proximate principle of an alimentary nature. There is another principle, the woody fibre, or *lignin*, in the potato, which is in a great measure insoluble in the stomach: it is found in the proportion of from ten to fifteen per cent. In these experiments, the potato is supposed to have been peeled.

In the proximate analysis of barley, chemists discover a peculiar principle, called *hordein*, in the proportion of fifty-five per cent.; but it so nearly resembles fecula that we have classed it under the same head with this latter, which, pure, is represented as constituting thirty-two per cent. of this grain. For the same reason, we have represented sago and tapioca as consisting nearly all of *fecula* or starch, whereas, in rigid chemical classification, it should be *amidine*, or starch modified by dry heat or by boiling water.

The detailed properties of these several proximate and nutritive principles will form the subject of future notices.

HISTORY OF THE INDIAN CHOLERA.

The epidemic cholera, which is now prevailing throughout the north of Europe, adding the horrors of pestilence to those of war, has become a subject of deep interest to every portion of the civilized world. However remotely situated from the present theatre of its ravages, there is no country the inhabitants of which can flatter themselves that they are perfectly secure from its visitation. Travelling, as it does, with an unexampled rapidity; unarrested in its progress by mountains or seas; prevailing alike in the driest weather and during the deluge of periodical rains; in storms and in calms; under the scorching sun of Arabia and amid the frosts of Russia, to determine the point or period at which its further extension will be stayed, defies all human calculation. Commencing at a point almost the farthest removed from ourselves, it has already traversed nearly half of the mighty interval, and, however improbable it may appear to some, that the disease will ever extend across the Atlantic; yet, judging from its progress heretofore, and the space over which it has already passed, this is by no means impossible. The only certain means of preventing the cholera from extending itself to this country, are a timely resort to correct precautionary measures founded upon the nature of the disease and the general principles of hygiene. With this fact in view, we have conceived it to be our duty to lay before our readers a brief sketch of the rise and progress of the pestilence, and, so far as we are able, from the documents in our possession, some account of its character and causes, together with the proper means for its prevention.

The terrific epidemic which is now ravaging the immense districts of the Russian empire, commenced its destructive career in various parts of the delta formed by the Ganges, during the summer of 1817. In 1818, it had reached as far north as Saharunpore, high up on the Jumna, and extended

itself south to Cape Cormorin, its westernmost limit being at Bombay and Surat, its easternmost at Sylhet: spreading towards the interior, from the mouth of the Ganges to its confluence with the Jumna, it extended itself over a space including four hundred and fifty square miles. In 1819, it attacked the Isles of France and Bourbon, in twenty-one degrees of south latitude. In the latter island, it began early in December. Of two hundred and fifty-seven persons seized with the distemper, one hundred and seventy-eight died. In 1820, it ravaged Siam, Malacca, Java, the Philipine Islands, the southern provinces of China, and Guzzerat, in India. In 1821, it is said to have destroyed sixty thousand subjects of the prince of Oman, round Muscat: during this year, it reached Bahrein, Bassora, Bagdad, Bushire, and Shiraz. In this latter city, the population of which is forty thousand, there died sixteen thousand in the first few days. In Bassora, eighteen thousand individuals perished, of whom fourteen thousand died in two weeks. During the succeeding winter, the disease became dormant, both in Persia and Syria. In 1822, it spread to Ispahan, Teheran, and Tabriz, to Diarbekir and Moussul, and reached, in 1823, the island of Amboyna, in one hundred and twenty-seven degrees of east longitude, extending also to Antioch, in longitude thirty-six degrees, and to Astrachan, in Asiatic Russia, in latitude forty-six degrees north. Having spread, in seven years, over ninety-one degrees of longitude, from Antioch to Amboyna, and sixty-seven degrees of latitude, from the Isle of Bourbon to Astrachan, and destroyed, in its course, not less than six millions of human beings.

The disease is generally understood to have broken out first at Jessore, a city eighty or ninety miles north-east from Calcutta, in the middle of August, 1817; but it appears to have prevailed to a considerable extent in the district of Nuddea, west of the Hoogly, as early as May and June. In July, it appeared also at Patna, near three hundred miles directly north-east of Calcutta. In the first week of August, at Calcutta, at Dacca, and Dinapore; on the 17th, at Sylhet and Jessore; by the end of August, at Boglipoor and Monghyr; September 15th, at Balasore; 17th, at Buxar; 18th, at Chupra and Ghazeepoor, and, by the end of November, at Rewah and Cuttach; the two last places being separated by at least four hundred miles. The causes of the disease appear to have been in a languishing or quiescent state during the winter of 1817; but in the months of April and May, 1818, they were manifested again with extreme violence, not only in many of the places where the disease had already appeared, but also at Ougein, Hooshungabad, Nagpore, (with numerous intervening districts,) and Ganjam; all these being nearly on a line of six hundred and forty miles from north-west to south-east. In various other places on a line, north and south, of six hundred miles, from Goruckpore to Visgapatam, the disease was also prevalent during the same period, of the year 1818. The cholera appeared in the latter year, in its most malignant form, at Benares, where, in two months, fifteen thousand persons perished. At Allahabad, forty or fifty died daily; and in the district of Goruckpore thirty thousand were carried off in a month. Between the 6th and 7th of November, the epidemic had reached the grand army of India, which, on the approach of the Pindarree war, had been concentrated at Jubbulpore,

Mundellah, and Sauger, under the command of the Marquess of Hastings. It consisted of ten thousand troops and eighty thousand followers. To the different divisions of this force the cholera proved more fatal than could the shot of the enemy in a well contested field. In twelve days, nearly nine thousand men had fallen to rise no more. In this emergency, it was fortunately determined by the commander-in-chief to try the effects of a change of location. The division accordingly moved in a south-easterly direction. In a short period, the Marquess was enabled to transmit a despatch to government, intimating that, having marched fifty miles, he had at last fixed upon a dry and elevated soil, where the pestilence rapidly declined.

Cochin-China and Tonquin were visited by the cholera in 1820. In December, of this year, it entered China, beginning its ravages at Canton.—Pekin admitted the enemy in 1821, and, during this and the following year, the mortality was so extensive that coffins and other funeral requisites were necessarily furnished at the expense of the public treasury, for the interment of the poorer classes. Numbers of people, engaged in the pursuits of business or pleasure, riding or walking, were seen to fall in the streets, exhausted by the sudden impression of the disease, which carried them a few hours afterwards to eternity. In many instances, the disease caused instantaneous death. Mr. Gordon relates many cases of this kind. At Bellary, a tailor was attacked with the cholera, and instantly expired, with his work in his hands, and in the very attitude in which he was sitting.

The rapidity by which the progress of the cholera was marked, may be judged of from the following statements. In less than a month, it spread from Jessore to Calcutta, a distance of nearly one hundred miles. From Jessore it reached Bombay, a distance, say, of eleven hundred miles, in twelve months, travelling at the rate of about three miles per day! It went from Allahabad to Etawah, at the rate of five miles a day; from Etawah to Agra, at the rate of about two miles. In its course across the Deccan, it advanced, in many instances, at the rate of fifteen to eighteen miles a day. The pestilence did not spread itself at once over a large extent of country, but attacked different places in succession; travelling, as it were, by a chain of posts, and attacking a second district, after it had ravaged a first.

With these details of the progress of the disease, in India, we must close on the present occasion, intending, in our next number, to trace its entrance into the Russian empire.

Pennsylvania Temperance Convention.—On the 24th of August, a Convention of delegates from several Temperance Societies in Pennsylvania, assembled at the Court House, in Harrisburg. Twenty-eight delegates, representing seventeen societies, attended. Delegates were also appointed by the Washington county, Fayette county, Butler county, and Reading Temperance Societies, who were prevented from attending by unavoidable circumstances. The Convention was organised, by appointing ROBERTS VAUX, Esq., of Philadelphia, President, and R. N. HAVENS, of Pittsburgh, and RICHARD T. LEECH, Esqs., of Harrisburg, Secretaries. After transacting the business for which it had assembled, the Convention adjourned on the evening of the 26th.—The Governor, Secretary of State, Surveyor General, and Auditor General took seats in the Convention.

THE JOURNAL OF HEALTH, is published at the Literary Rooms, No. 121 Chesnut street, Henry H. Porter, proprietor, on the second and fourth Wednesdays of every month. The subscription is $1.25 per annum, payable in advance.—The first and second volumes can be had, as above, in boards or bound.—The postage on each number of the Journal is the same as on newspapers.